

Expanding the Operational Use of Total Lightning Ahead of GOES-R

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NASA's Short-term Prediction Research and Transition Center (SPoRT) has been transitioning real-time total lightning observations from ground-based lightning mapping arrays since 2003. This initial effort was with the local Weather Forecast Offices (WFO) that could use the North Alabama Lightning Mapping Array (NALMA). These early collaborations established a strong interest in the use of total lightning for WFO operations. In particular the focus started with warning decision support, but has since expanded to include impact-based decision support and lightning safety.

SPoRT has used its experience to establish connections with new lightning mapping arrays as they become available. The GOES-R / JPSS Visiting Scientist Program has enabled SPoRT to conduct visits to new partners and expand the number of operational users with access to total lightning observations. In early 2014, SPoRT conducted the most recent visiting scientist trips to meet with forecast offices that will use the Colorado, Houston, and Langmuir Lab (New Mexico) lightning mapping arrays. In addition, SPoRT met with the corresponding Center Weather Service Units (CWSUs) to expand collaborations with the aviation community.

These visits were an opportunity to learn about the forecast needs of each office visited as well as to provide on-site training for the use of total lightning, setting the stage for a real-time assessment during May-July 2014. With five lightning mapping arrays covering multiple geographic locations, the 2014 assessment has demonstrated numerous uses of total lightning in varying situations. Several highlights include a much broader use of total lightning for impact-based decision support ranging from airport weather warnings, supporting fire crews, and protecting large outdoor events. The inclusion of the CWSUs has broadened the operational scope of total lightning, demonstrating how these data can support air traffic management, particularly in the Terminal Radar Approach Control Facilities (TRACON) region around an airport. These collaborations continue to demonstrate, from the operational perspective, the utility of total lightning and the importance of continued training and preparation in advance of the Geostationary Lightning Mapper.